

In the claims:

Please amend the claims as follows:

1-5. (Cancelled)

6. (Currently Amended) The A method of claim 5 for sensing a physical condition, the method comprising:

(a) generating light;

(b) passing a first portion of the light through a first optical path comprising a first optical fiber, the first optical fiber being characterized by a first optical path length which changes in response to the physical condition;

(c) passing a second portion of the light through a second optical path comprising a second optical fiber, the second optical fiber being characterized by a second optical path length which changes in a controllable manner;

(d) causing the first portion of the light which has passed through the first optical path to interfere with the second portion of the light which has passed through the second optical path;

(e) changing the second optical path length within the second optical fiber until step (d) results in an interference fringe having a maximum; and

(f) determining the physical condition in accordance with a value of the second optical path length corresponding to the maximum of the interference fringe;

wherein step (e) comprises changing a physical length of the second optical fiber through stretching the second optical fiber; and

wherein the second optical fiber is wrapped around a pulley and secured to an anchor and is stretched by use of the pulley and the anchor.

7-29. (Canceled)

30. (Currently Amended) ~~The A sensing system of claim 29 for sensing a physical condition, the sensing system comprising:~~

a source of light;

a first optical path comprising a first optical fiber, the first optical fiber being characterized by a first optical path length which changes in response to the physical condition;

a second optical path comprising a second optical fiber, the second optical fiber being characterized by a second optical path length which changes in a controllable manner;

at least one coupler for causing first and second portions of the light from the source to pass through the first and second optical paths and for causing the first portion of the light which has passed through the first optical path to interfere with the second portion of the light which has passed through the second optical path;

a photodetector for detecting an interference fringe between the first and second portions of the light and for outputting a signal representing the interference fringe;

an actuator for changing the second optical path length within the second optical fiber until the interference fringe has a maximum; and

a system, receiving the signal from the photodetector, for permitting a determination of the physical condition in accordance with a value of the second optical path length corresponding to the maximum of the interference fringe;

wherein the actuator changes a physical length of the second optical fiber through stretching the second optical fiber; and

wherein the actuator comprises a pulley and an anchor, and wherein the second optical

fiber is wrapped around the pulley and secured to an anchor and is stretched by use of the pulley and the anchor.

31-51. (Canceled)

52. (Amended) The A sensing instrument of claim 51 for use with a sensor in sensing a physical condition, the sensing instrument comprising:

a source of light;

a reference optical fiber having a fixed optical path length;

an adjustable optical fiber having a controllably adjustable optical path length;

at least one optical coupler for causing the light from the source to pass through the sensor, receiving the light which has passed through the sensor, splitting the light which has passed through the sensor to the reference optical fiber and the adjustable optical fiber, and causing the light which has passed through the reference optical fiber to interfere with the light which has passed through the adjustable optical fiber;

a photodetector for detecting an interference fringe between the light which has passed through the reference optical fiber and the light which has passed through the adjustable optical fiber;

an actuator for changing the controllably adjustable optical path length within the adjustable optical fiber until the interference fringe has a maximum; and

a system, receiving the signal from the photodetector, for permitting a determination of the physical condition in accordance with a value of the second optical path length corresponding

to the maximum of the interference fringe;

wherein the actuator changes a physical length of the adjustable optical fiber through
stretching the adjustable optical fiber; and

wherein the actuator comprises a pulley and an anchor, and wherein the adjustable optical fiber is wrapped around the pulley and secured to the anchor and is stretched by use of the pulley and the anchor.

53-54. (Canceled)